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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,789	11/24/2003	Kazunori Hagimoto	SUG-176-USAP	1591
28892 7590 01/08/2007 SNIDER & ASSOCIATES P. O. BOX 27613 WASHINGTON, DC 20038-7613			EXAMINER WEISS, HOWARD	
			ART UNIT	PAPER NUMBER
			2814	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/718,789

Applicant(s)

HAGIMOTO ET AL.

Examiner

Howard Weiss

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: SUG-176-USAP

Filing Date: 11/24/03

Continuing Data: RCE established 11/15/2006

Claimed Foreign Priority Date: 11/28/2002, 12/25/2002, 1/31/2003, 8/29/2003

Applicant(s): Hagimoto et al. (Noto)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/15/2006 has been entered.

Claim Objections

2. Claim 38 recites the limitation "the Ag-base layer" in Line 19. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 33 to 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutimi et al. (JP 2001-339100), Carter-Coman et al. (U.S. Patent No. 6,222,207), Burt (U.S. Patent No. 4,574,470), Gee et al. (U.S. Patent No. 6,969,874) and Murasato et al. (U.S. Patent No. 5,744,829).

Yasutimi et al. show most aspects of the instant invention (e.g. Figure 2) including:

- A compound semiconductor layer **4** including a light-emitting layer consisting of N-type AlGaInP cladding layer **41**, an AlGaInP active layer **42** and a P-type AlGaInP cladding layer **43** and a light extraction surface **44** and sensitive to the wavelength ranges listed
- A silicon device substrate **2** bonded to said compound semiconductor layer
- A multilayered metal reflective layer **3**

Yasutimi et al. do not show the metal reflective layer being Pd/Ag alloy or Ag, Ru, Rh, Re, Os, Ir and Pt based, an Ag-based contact layer as claimed and a silicon-diffusion-blocking layer of the composition claimed and the layers in the light-emitting layer to be explicitly composed of $(\text{Al}_x\text{Ga}_{1-x})_y\text{In}_{1-y}\text{P}$ where $0 \leq x \leq 1$ and $1 \leq y \leq 1$ (Here $1 \leq y \leq 1$ is taken to mean $y=1$).

Carter-Coman et al. teach (e.g. Figures 2) to make a metal reflective layer **34** Ag-based, a contact layer **32** and a silicon-diffusion-blocking layer **36** made of a conductive material with Ti or Ni as a major component (e.g. NiV) to produce an light emitting device with high reflectivity after subjected to high temperatures (Column 2 Lines 23 to 34). It would have been obvious to a person of ordinary skill in the art at the time of invention to make a metal reflective layer Ag-based, a contact layer and a silicon-diffusion-blocking layer as taught by Carter-Coman et al. in the device of Yasutimi et al. to produce an light emitting device with high reflectivity after subjected to high temperatures.

Burt teaches (e.g. Column 6 Lines 41 to 47) that NiV inherently blocks silicon diffusion. The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of prior art reference, a question of fact, arises both in the context of anticipation and obviousness." *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir.1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent

disclosure in one of the references). See also *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed.Cir. 1983).

Gee et al. teach (e.g. Figures 3 and 4) to make ohmic contacts **20**, reflective layers **24** and diffusion barriers of Pd/Ag alloy or Ag, Ru, Rh, Re, Os, Ir and Pt based (Column 4 Lines 36 to Column 38) to provide a low resistance, good optical reflectance, good adhesion and to control unwanted diffusion during annealing (Column 4 Line 55 to Column 5 Line 1). It would have been obvious to a person of ordinary skill in the art at the time of invention to make ohmic contacts, reflective layers and diffusion barriers of Pd/Ag alloy or Ag, Ru, Rh, Re, Os, Ir and Pt based as taught by Gee et al. in the device of Yasutimi et al. to provide a low resistance, good optical reflectance, good adhesion and to control unwanted diffusion during annealing.

Murasato et al. teach (e.g. Figure 1 and Column 3 Lines 55 to 63 and Column) to use double hetero-structure $(Al_xGa_{1-x})_yIn_{1-y}P$ where $0 \leq x \leq 1$ and $1 \leq y \leq 1$ in cladding layers **5,7** and active layer **6** to provide a high brightness, low operating voltage and high reliability device (Column 2 Lines 65 to 67). It would have been obvious to a person of ordinary skill in the art at the time of invention to use double hetero-structure $(Al_xGa_{1-x})_yIn_{1-y}P$ where $0 \leq x \leq 1$ and $1 \leq y \leq 1$ in cladding layers and active layer as taught by Murasato et al. in the device of Yasutimi et al. to provide a high brightness, low operating voltage and high reliability device.

Response to Arguments

5. Applicant's arguments with respect to Claims 33 to 38 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

7. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via Howard.Weiss@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.

9. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/ 96, 98	thru 1/3/2007
Other Documentation: none	
Electronic Database(s): EAST	thru 1/3/2007

HW/hw
3 January 2007

Howard Weiss
Primary Examiner
Art Unit 2814

